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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/029,879

12/31/2001

Andrew Lloyd Jackson

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09/30/2005

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EXAMINER

MEW, KEVIN D

ART UNIT

PAPER NUMBER

2664

DATE MAILED: 09/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/029,879

Applicant(s)

JACKSON, ANDREW LLOYD

Examiner

Kevin Mew

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 13 and 14 is/are rejected.
- 7) ☒ Claim(s) 9-12 and 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/31/2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Detailed Action

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

In particular, the title of the present application should be removed from the abstract page.

2. The disclosure is objected to because of the following informalities:

On page 6, the last line of the first paragraph, add the term "be" in between "to maintained."

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 3-4, 6-8, 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Ghahremani et al. (US Publication 2005/0180429).

Regarding claims 1, 6, Ghahremani discloses a device for filtering traffic in a computer network (multi-service network switch for filtering traffic, paragraphs 0048, 0086), comprising:

a first processor (forwarding module FM, element 12, Fig. 1) for receiving network traffic from at least one network port (receiving packets through a media port, paragraph 0225), wherein the first processor (the FM module 12, Fig. 2) is operatively connected to at least a private memory (FM module is operatively connected to the IP forwarding table 90 in the IP forwarder 44, paragraphs 0066, 0012-0018 and Figs. 2, 4; note that IP forwarder is part of the FM module in Fig. 2);

a first filter table resident in the private memory (IP forwarding table), the first filter table containing at least partial traffic identification information for network traffic received from the at least one network port (IP forwarding table contains destination address, paragraph 0017 and Fig. 6);

a second processor (system control module SCM, element 14, Fig. 1; note that SCM has similar function components as the FM module, paragraph 0050) for network traffic forwarded

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from the first processor (a request for the route is received from the FM module to SCM, paragraphs 0120, 0121), the second processor (SCM, Fig. 1) being operatively connected to the first processor (FM module 12, Fig. 1) through at least a shared memory (SCM is operatively connected to FM module via routing table 70, Fig. 1); and

a second filter table maintained in the shared memory (routing table 70 of SCM), the second filter table (routing table 70 of SCM, paragraphs 0100, 0121) containing at least partial traffic identification information for network traffic received from the at least one network port (routing table 70 of SCM contains destination address information, paragraph 0100, 0121),

wherein the first processor (FM module) operates to filter network traffic by looking up identification information in the first filter table (FM module tries to obtain destination information from its IP forwarding table 90, paragraph 0100), when such identification information is not found in the first filter table (if destination information is not found successfully, the IP forwarder attempts to obtain the information from SCM, paragraph 0100), the network traffic is forwarded to the second processor (forwards a request for the route to the SCM, paragraph 0121).

Regarding claim 3, Ghahremani discloses the device of claim 1, wherein the content and format of the first filter table are maintained by the second processor (IP forwarder is maintained by the routing table 70 stored in the SCM, paragraph 0100).

Regarding claim 4, Ghahremani discloses the device of claim 1, wherein the network traffic identification information comprises at least source and destination addresses (source addresses and destination addresses, paragraph 0086).

Regarding claim 7, Ghahremani discloses the method of claim 6, wherein the data packet identification information includes a source address and at least one destination address relating to unique network devices (source address and destination address unique to a network device, paragraph 0086).

Regarding claim 8, Ghahremani discloses the method of claim 7, wherein the source and destination addresses are media access control addresses (MAC addresses, paragraph 0112 and Fig. 7).

Regarding claim 14, Ghahremani discloses the method of claim 6, wherein the content and format of the first filter table are maintained by the second processor (IP forwarder is maintained by the routing table 70 stored in the SCM, paragraph 0100).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 2, 5, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ghahremani et al. in view of Yazdani et al. (USP 6,859,455).

Regarding claim 2, Ghahremani discloses all the aspects of the claimed invention set forth in the rejection of claim 1 above, except fails to explicitly show the device of claim 1, wherein the first filter table is in the form of a balanced binary tree. However, Yazdani discloses utilizing a balanced binary tree algorithm during the filtering data packet operation (col. 19, lines 30-51). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device and method of filtering traffic in Ghahremani with the teaching of Yazdani in utilizing a balanced binary tree algorithm during the filtering data packet operation such that the first filter table/forwarding table is in the form of a balanced binary tree. The motivation to do so is to provide a more efficient search time when searching for destination address information.

Regarding claim 5, the combined system of Ghahremani and Yazdani disclose all the aspects of the claimed invention set forth in the rejection of claim 1 above. Ghahremani further discloses the device of claim 2, wherein the source and destination addresses further comprise

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media access control addresses unique to particular network devices (MAC addresses, paragraph 0112 and Fig. 7).

Regarding claim 13, Ghahremani discloses all the aspects of the claimed invention set forth in the rejection of claim 1 above, except fails to explicitly show the method of claim 6, wherein the first filter table is in the form of a balanced binary tree. However, Yazdani discloses utilizing a balanced binary tree algorithm during the filtering data packet operation (col. 19, lines 30-51). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device and method of filtering traffic in Ghahremani with the teaching of Yazdani in utilizing a balanced binary tree algorithm during the filtering data packet operation such that the first filter table/forwarding table is in the form of a balanced binary tree. The motivation to do so is to provide a more efficient search time when searching for destination address information.

Allowable Subject Matter

5. Claims 9-10, 11-12, 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

In claim 9, the method of claim 7, wherein the step of determining whether the extracted packet information is contained within a first filter table further comprises the steps of:

determining whether the first filter table includes the at least one extracted destination address;

forwarding the data packet to the second processor if it is determined that the first filter table does not include the at least one extracted destination address;

determining whether the first filter table includes the extracted source address if it is determined that the first filter table includes the at least one extracted destination address;

forwarding the data packet to the second processor if it is determined that the first filter table does not include the extracted source address;

identifying all network ports associated with the at least one destination address in the first filter table if it is determined that the first filter table includes the extracted source address; and

forwarding the data packet to identified network ports .

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In claim 11, the method of claim 7 wherein the step of determining whether the extracted packet information is contained within a second filter table further comprises the steps of:

determining whether the second filter table includes the extracted source address;

creating a new entry in the second filter table if it is determined that the second filter table does not include the extracted source address;

determining whether the second filter table includes the at least one extracted destination address;

forwarding the data packet to all available network ports if it is determined that the second filter table does not include the at least one extracted destination address;

identifying all network ports associated with the at least one destination address if it is determined that the second filter table includes the at least one extracted destination address; and

forwarding the data packet to identified network ports.

In claim 15, a method for maintaining the first filter table of claim 2, comprising the steps of:

determining, for a particular entry in the second filter table, whether a corresponding entry exists in the first filter table;

determining whether space exists within the first filter table to add a new entry and maintain maximum search times below a predetermined limit if it is determined that a corresponding entry does not exist;

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determining whether, upon addition of a new entry, the height of the binary tree would exceed a predetermined limit if it is determined that space exists within the first filter table;

rebalancing the binary tree if it is determined that, upon addition of a new entry, the height of the binary tree would exceed a predetermined limit; and

inserting a new entry into the tree corresponding the particular entry in the second filter table.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent 5,414,704 to Spinney

US Publication 2003/0061332 to Narad et al.

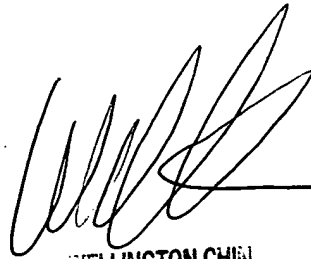
US Patent 6,782,186 to Covell et al.

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 571-272-3141. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


WELLINGTON CHIN
SUPERVISORY PATENT EXAMINER

KDM
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